

ANNUAL REPORT

of the

**ROYAL ONTARIO MUSEUM OF ZOOLOGY
AND PALAEOLOGY**



1951 - 52

ROYAL ONTARIO MUSEUM
OF ZOOLOGY AND PALAEONTOLOGY

Annual Report for 1951-52

DIVISION OF VERTEBRATE PALAEONTOLOGY

Associate Curator - L. Sternberg
Senior Technician - R. R. Hornell

Accessions: In view of the fact that there were no expeditions into vertebrate fossil-bearing fields during the past year, no appreciable additions were made to the collections.

Preparation, Registration and Maintenance: The preparation of an armoured dinosaur, new to our collection, and perhaps representing a new species, is being carried on by the Senior Technician. It will probably take more than two years to complete preparation of this specimen because it is embedded in exceptionally hard rock.

A number of casts of some of our dinosaur skulls are being made. Some of these will be sent to the Peabody Museum in exchange for material which was received from them some years ago.

A considerable amount of time was spent during the past year in reorganizing the card index system of books, pamphlets and other publications, dealing with Vertebrate Palaeontology. In this task the Associate Curator was assisted by the Librarian for Palaeontology. Many thousands of cards were checked, necessary changes made, and the classifications brought up-to-date according to the most recent authorities. With regard to this work the Librarian deserves particular mention for the excellent work carried out in contacting various institutions and workers who have contributed many books and pamphlets to our Divisional Library.

All of the larger Museums have been contacted during the past year with regard to obtaining the necessary material for completing an exhibit on the evolution of the horse. Until we have been successful in obtaining such material the exhibit will be replaced in the gallery much as it was originally.

A large storage case was constructed containing suitable racks upon which to store large specimens formerly contained in wooden boxes. As a result of this change we have now considerably more storage space, and, incidentally, eliminated a fire hazard due to the presence of large boxes containing excelsior and other combustible material.

Research: Dr. L. S. Russell, now on the staff of the National Museum of Canada, made use of our material in carrying out the following items of research:

1. Mammalian fauna of the Cypress Hills formation (Lower Oligocene) of Saskatchewan. The specimens obtained by the Museum expeditions of 1948 and 1949, under a grant from the University of Toronto Research Fund, are being studied in conjunction with similar material in the National Museum of Canada. It is planned that the combined collections will eventually be described in a monograph to be published by the National Museum of Canada. During the present year the work has been mainly on the smaller mammals, and the specimens collected to date have been identified, described, and photographed. The most difficult group was that of the rodents, which required a relatively large amount of the time available.

2. Mammalian fauna of the Swift Current Creek beds (Upper Eocene) of Saskatchewan. Study of the collection made from these deposits in 1949 has been completed, and a paper describing the Royal Ontario Museum of Zoology and Palaeontology and National Museum of Canada specimens is being submitted for publication in the Annual Report of the National Museum for 1951-52.

3. Mammalian fauna of the Wood Mountain gravel (Miocene) of Saskatchewan. Study of this fauna has been completed in all essentials, and a paper describing the specimens will be prepared in the near future.

4. Cephalaspis remains from the Gaspé sandstone (Middle Devonian) of D'Aiguillon, South Gaspé, Quebec. This collection, made by G. E. Linblad and René Bureau, under Dr. Russell's direction, in 1946, is being studied in connection with specimens in the National Museum. A description will be prepared for publication in the near future.

Public Relations: Further information was given to industrialists regarding the technique and use of liquid latex as a medium in casting and moulding. A number of classes and groups were escorted through the gallery and work rooms, with talks on the exhibits and explanations of the work in collecting and preparing dinosaur skeletons. Moving pictures were taken of the dinosaur exhibits to be used in a short film on the Bad Lands of Alberta.

Dr. W. K. Gregory, outstanding Vertebrate Palaeontologist, of Columbia University and the American Museum of Natural History, New York, spent three or four days in this division, making detailed studies of certain forms of fossil vertebrates. Dr. L. S. Russell of the National Museum of Canada has made a number of trips to the Museum in connection with his studies on the material collected by this Division in 1948 and 1949. The Associate Curator attended the meetings of the Society of Vertebrate Palaeontology, held at Detroit in November, 1951.

Material Catalogued:

Fossil mammal material	135
Fossil Reptile material	<u>50</u>
Total	185

DIVISION OF MAMMALOGY
Curator - R. L. Peterson

Research Assistant - S. C. Downing
Technician - L. A. Walden

Accessions: During the past year, 592 specimens were received by the Divisions. Donations account for the majority of specimens received. Outstanding among these were important big game and fur-bearer species received through the offices of the Department of Lands and Forests and two private collections of small mammals, one donated by Mr. George Beare of Kapuskasing, Ontario, and the other by Mr. G. E. Edmunds of Toronto, Ontario. Several other smaller private donations have been gratefully acknowledged during the year.

Nature of specimens	By Donation	By Staff Collection	By Exchange	By Purchase	Totals
Unprepared	109	134			243
Partially Prepared	209			1	210
Prepared	31		60	48	139
Totals	349	134	60	49	592

Preparation, Registration and Maintenance: The processing of scientific specimens has made satisfactory progress during the year. A total of 896 specimens was prepared and 2,650 specimens were catalogued and added to the permanent collections. This has greatly reduced the backlog of material that has been awaiting processing so that it could be incorporated into the collections. It is anticipated that during the coming year this Division, for the first time in its history, will have its entire collection processed and properly arranged for scientific study, with only currently received material awaiting processing.

A complete inventory of all specimens has been started. The expansion and re-arrangement of the study skin collection has been carried out, with the carnivore collections being moved into a separate room.

A set of maps covering the general distribution of North American mammals has been established and is being kept up-to-date. Detailed mapping of all Ontario records of distribution has continued with a start being made on the distribution of all mammals occurring in eastern Canada.

The Division's library has greatly expanded with the transfer of all re-printed separates dealing with mammals from the main Zoology library.



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Index cards have been prepared for the entire separate collection, and incorporated into the Division's literature reference file. This file, covering the general field of mammalogy, with special reference to Canada, has been greatly expanded during the year, with over 15,000 new entries. The maintenance and expansion of this file was made possible through financial assistance from the Ontario Research Council.

Preparation:		Registration:	
Skins	119	All specimens	2,650
Hides (prepared for tanning)	6		
Skulls	740		
Skeletons	31		
Totals	896		2,650

Research: The Curator in collaboration with the Research Assistant completed the study on the taxonomy and distribution of the bobcat (Lynx rufus) in eastern North America, which was published by this Museum in its Contribution series (No. 33).

Research was continued on the genus Alces (North American Moose and Old World Elk) by the Curator. Two scientific papers, one in final manuscript stage, with three others in rough draft, cover various aspects of recent studies of this species.

A taxonomic study of the red squirrels (Tamiasciurus hudsonicus) of eastern Canada was carried forward.

Research on speciation and distribution of red foxes was continued with one short paper having been submitted for publication in the Journal of Mammalogy. The Curator spent some time at the United States National Museum studying types and other red fox specimens in their collections. He also carried out other studies while visiting at the Museum of Zoology, University of Michigan and the Carnegie Museum in Pittsburgh.

In connection with the research of other institutions, specimens were lent to workers at the Museum of Natural History, University of Kansas, the University of British Columbia and the National Museum of Canada.

Public Relations and Education (other than University): The Curator, after having served for four years on the Board of Directors of the American Society of Mammalogists, has been elected to serve as Recording Secretary of that organization for the coming year.

In cooperation with the Ontario Department of Lands and Forests, the Curator gave to officers of that Department a brief lecture course on Mammals at the Dorset Ranger School.

The Division continues to offer many services to various individuals, institutions and organizations. A great many specimens were lent for demonstration and lecturing purposes. The identification of specimens for other scientists, for legal purposes, for students and interested individuals continues to increase.

University Services: The Curator offered a graduate course in Mammalogy, conducted the Mammalogy section of Course 25 in Zoology, and worked closely with the Department of Zoology by counseling students in various research problems, by serving on graduate examining committees and by assisting various students in searching out literature references to problems dealing with Mammalogy. The last mentioned services were extended not only to students of the University of Toronto but also to others at Queen's University, University of Western Ontario, University of Alberta, University of Saskatchewan, Cornell University, and personnel in various other universities and colleges in the United States.

Utilization of the Division's library and literature index continues to increase by both students and faculty members of the University.

DIVISION OF ORNITHOLOGY
Curator - L. L. Snyder

Research Assistant - J. L. Baillie
Senior Technician - C. E. Hope

Accessions: Although no field work was carried out during the year, significant additions were made through other channels. Accession of Arctic material from the Boothia Peninsula area of the Northwest Territories has accrued in part by an arrangement with Mr. L. A. Learmonth. In addition to the specimens reported last year, 153 more salted skins have reached the Museum. To these can be added 43 salted specimens from Arctic Bay, Baffin Island, secured and generously donated by Mr. Howard Parsonson.

A selection of 110 casualty birds forwarded to the Museum by the Ontario Department of Lands and Forests has afforded valuable material for both the research collection and for exchange. Mr. O. D. Boggs presented 77 prepared specimens collected in Alberta. Also, Mr. Walter Drynan of Toronto has donated a Passenger Pigeon which brings the Museum's total series to 112.

A small but continuing exchange arrangement is being carried on with the Naturhistorisk Museum of Aarhus, Denmark, and the National Museum of Victoria, Melbourne, Australia. Exchanges with the latter during the year have provided this Museum with representative specimens of Pedionomidae and Atrichornithidae the last two Families of extant birds previously unrepresented in its collections.

The table below indicates the total of specimens acquired during the past year:

Nature of Specimen	By Donation	By Staff Collection	By Purchase	By Exchange	Totals
Unprepared	328	27	153		508
Prepared	144			46	190
Nests and Eggs	2	2			4
Skeletons	1				1
Totals	475	29	153	46	703

Preparation, Registration and Maintenance: The Senior Technician devoted considerable attention to registration in order to facilitate the reduction of a backlog of uncatalogued material. Some re-arrangement of specimens in the bird range was required both to bring the collection in accord with recent systematic revisions, and to permit the incorporation of additional material. Two new cabinets were acquired which give partial relief of congestions in the lower Orders. The table below presents details of accomplishment in this phase of the Division's work:

Preparation:		Registration:	
Bird skins (from the flesh)	141	Bird skins	1, 619
Bird skins (dry)	207	Skeletons	20
Articulated skeletons	-	Miscellaneous	-
Disarticulated skeletons	1		
Miscellaneous	13		
Totals	362		1, 639

Research: The major systematic study made by the Curator during the year was a review and assessment of variations in eastern North American Empidonaces and a manuscript on this subject has been prepared for publication. He has accomplished further work toward a report on summer birds of western Ontario, which study served to initiate some revision of the collections with the cooperation of the Research Assistant. This work pertained to races of Parus atricapillus, Troglodytes aedon and Dendroica petechia. They also revised the collection of Colymbus grisegena with respect to plumage sequence. A study of the Museum's series of Canadian specimens of Agelaius phoeniceus was undertaken by a graduate student under the direction of the Curator. The Research Assistant has continued

to compile and report on seasonal ornithological events in the Ontario and western New York region for the Audubon quarterly report. All members of the Division's staff have devoted considerable time as cooperators in revising distributional data for the American Ornithologists' Union's Check-List of North American Birds. The Curator continued his annual census and bird-banding operations in King Township during the summer. The Division's project of mapping the distribution of Ontario birds based on field surveys, the collections, ornithological literature and information from miscellaneous sources, has received attention during the year. These maps are now sufficiently complete to reveal the portions of the province inadequately known. An additional undertaking involving the mapping of the distribution of Arctic birds has been made possible by the part-time employment of an assistant. This project is preliminary to a proposed work on Arctic birds contemplated for the future.

Aid has been rendered to research workers in ornithology elsewhere. A collection of Passeriform birds in natal down was lent to Clark University, Worcester, Mass. Specimens of Parus hudsonicus were lent to the National Museum of Canada, Ottawa; specimens of Zonotrichia leucophrys were lent to the Carnegie Museum, Pittsburgh, Penna.; and specimens of Passerella iliaca were lent to Hanover College, Hanover, Indiana. Data were forwarded to workers at the University of Wisconsin, Madison, Wisconsin, and to Brooks School, Andover, Mass. The staff has further assisted authors and editors by critically reading manuscripts submitted to them.

Education and Public Relations (other than University): Identification of specimens for governmental departments, commercial firms and private individuals continues to be a regular service of the Division.

The Curator prepared an historic and descriptive article on the Royal Ontario Museum of Zoology and Palaeontology for the initial number of the new journal "Systematic Zoology".

The staff has continued to take an active part in the affairs of local, national and international organizations concerned with their field of work. As a Committee Chairman for the American Ornithologists' Union, the Curator has been engaged in assembling considerable biographical and bibliographical data. In prosecuting the affairs of the Division, 781 letters have gone out during the year. Also, in addition to University lectures, members of the staff have given 17 lectures to organized groups within and outside the Museum during the year.

University Services: Ornithological instruction has been given by the Curator to the University class in Systematics, Course 25, and guidance given to one graduate student. The Research Assistant has supervised the preparation and cataloguing of lantern slides for teaching, the collection now numbering 684, and the Senior Technician has made several replacements and additions of specially reinforced specimens of birds for class use.

DIVISION OF ICHTHYOLOGY AND HERPETOLOGY

Curator - W. B. Scott

Associate Curator - E. B. S. Logier

Technician - E. H. Taylor

The catalogued collections of the Division have grown considerably during the past year. The backlog of accessioned material had accumulated during the period of reorganization of the filing and storage systems, but the time spent in this reorganization will be repaid many times because of the increased usefulness of the collection.

Accessions: The Division's collection has grown through donations and staff collections, the latter made possible in part by a grant from the Research Council of Ontario. The noteworthy donations received during the year include a collection of fishes from the Beaufort Sea received through the Fisheries Research Board of Canada, large collections from Manitoba received through Mr. George Butler and Mr. B. Kooyman of the Manitoba Fisheries Department, a good representative collection of fishes from the Spanish River, Ontario, received through Dr. J. R. Dymond, University of Toronto, and four large collections of Ontario fishes from the Napanee, Saugeen, Grand, and Thomas river systems received from the Department of Planning and Development, through the office of Mr. K. Mayall.

Nature of Specimen	By Donation	By Staff Collecting	By Purchase	By Exchange	Totals
Fishes (lots and individuals)	252	160		3	415
Amphibians and Reptiles	176				176
Totals	428	160		3	591

Preparation, Registration and Maintenance: The card catalogue system for the fish collection, which was started three years ago, has been completed. The system has already been of great assistance in dealing with distributional problems because of the ease in checking distributional records of Ontario fishes. The maintenance of the alcohol collection of fishes, amphibians and reptiles has been continued.

The small Divisional library, which was organized only a year ago, has grown considerably and has proved to be extremely useful to the Division as well as to outside organizations.

The registration of material - that is the incorporation of specimens into the permanent collection - has been a major task during the year and as a

result the collection has grown considerably. More material was catalogued during the year than in any comparable period for many years. The following figures reflect the great amount of effort put forth by the staff, especially that of the Associate Curator:

Material Catalogued:

Fish specimens and lots	780
Amphibians and Reptiles	1,724
Totals	2,504

Research: The study of the Lake Erie cisco (Leucichthys artedi) conducted by the Curator has been continued and reports on the taxonomy and population characteristics of this species are planned for the coming year. A study of the food of the blue pikeperch (Stizostedion vitreum glaucum) was carried out and the examination of the contents of some 3,000 stomachs completed. A report on this food study will be issued during the coming year. In cooperation with the Department of Lands and Forests, Fish and Wildlife Division, a study of the ciscoes of Lake Simcoe was started and will be continued during 1952.

During the year the Curator spent a considerable amount of time assembling material for the publication of a handbook dealing with the fishes of Ontario. This developed into a major effort and hence took priority over other studies. A paper by the Curator dealing with the Ontario distribution of the western lake chubsucker (Erimyzon sucetta kennerleyi) is now in press. In addition a distributional note on the freshwater drum (Aplodinotus grunniens) was submitted for publication by the Curator and Mr. B. Kooyman of the Manitoba Fisheries Department.

The Associate Curator has completed a book entitled "The Frogs, Toads and Salamanders of Eastern Canada" which has been published by the Clarke Irwin Company. A companion volume "The Reptiles of Eastern Canada" is in the course of preparation.

The Division, and particularly the Curator, gave technical advice on the production of a film for the Carling Conservation Club. One film on the speckled trout (Salvelinus fontinalis) was completed and another on the black bass (Micropterus dolomieu) was initiated.

In cooperation with the Division of Art and Exhibits, the Division has given technical assistance in the planning of a new Gallery of Fishes. The division also assisted in the manual work required in clearing the present gallery in preparation for the new installations. The fishes collected in the Spanish River, Sudbury District, Ontario, in the course of a pollution study of that river under the direction of Dr. J. R. Dymond were identified by the Division. The Curator assisted in the field collection of some

of the material during the study.

Public Relations and Education (other than University): The identification service carried on for other organizations and institutions has been continued. A total of 240 lots of fishes, amphibians and reptiles, involving approximately 4,000 specimens, has been identified for various organizations including The Ontario Department of Lands and Forests, Fish and Wildlife Division; The Ontario Department of Planning and Development; Game and Fisheries Branch of the Manitoba Department of Mines and Natural Resources; Dominion Wildlife Service; and the Fisheries Research Board of Canada.

The Division has cooperated with the Research Council of Ontario and the Department of Lands and Forests in a study of future fisheries research work on Lake Erie.

University Services: While no formal Ichthyology course was required during the year, an informal four months' course was given by the Curator to a staff member of the John Leckie Company of Toronto at the request of the Head of the Zoology Department. The Curator served on a graduate examining committee for the Department of Zoology. Fish specimens from the collections were lent to the Department of Zoology to facilitate the conducting of University classes during the year.

DIVISION OF ENTOMOLOGY

Curator - F. A. Urquhart

Honorary Curator - E. M. Walker

Assistant Curator - T. B. Kurata

We wish to record in this report that Miss Virginia Kohler, who has been very active in the work of the Division during the past three years, resigned. She is now residing on Pelee Island, Ontario, as the wife of Mr. William DeBel.

Accessions: A total of 225 specimens of insects representing three Orders (Orthoptera, Trichoptera, and Plecoptera) were added to the research collection during the past year.

Preparation, Registration and Maintenance: For many years the alcohol collection of invertebrates received little attention owing to the fact that it was inadequately stored in deep cupboards in the Division of Ichthyology. With the expansion of the Division of Ichthyology it was found necessary to remove this collection and establish it in suitable storage cupboards in the Division of Entomology. During the past year the entire collection was re-examined. Damaged material was discarded; long series reduced to a few pertinent locality records; and fresh alcohol placed in the jars of the material retained.

Research: The Assistant Curator continued his study of a collection of spiders from Pelee Island. As a result of this study 125 species have now been recorded for the area, in addition to 10 new records for Canada. The Assistant Curator also carried out preliminary studies of the following genera of spiders: Metaphippus, Pardosa, Xisticus, and Exiptila. The Honorary Curator, Dr. E. M. Walker, has carried out the following items of research: Descriptions of all the Canadian species of Zygoptera (damselflies) have been completed for a monographic study of this group of insects; the complete descriptions of both sexes of the adults of the 51 species and all the known nymphs (43 species). Keys to species of all genera have been prepared, including both adults and nymphs; keys to families and genera have also been completed.

The section on geographical distribution of the Zygoptera is finished and the life history notes on ten of the species have been prepared.

Some 340 drawings have been made and most of them arranged on cardboard sheets so as to make 26 plates.

A major part of the year's work was a preparation of part 1 of the study, which is an introduction to the Order Odonata (dragonflies in general).

The Curator continued the study of the Orthoptera of Eastern Canada in preparation for a book sized publication dealing with this Order of insects for this particular area. He also initiated a study of the species of Plecoptera.

Public Relations and Education (other than University): Numerous requests for the identification of insects have been received during the year. Of these the most important were insect pests submitted by the Provincial Department of Health and the Toronto City Hall.

A manuscript for an elementary book on insects was completed by the Curator. The book will be illustrated by the Associate Curator of the Division of Ichthyology and Herpetology. This book is expected to be published during the Fall of the year.

Several collections of Odonata have been identified, including one from the Miramichi district of New Brunswick received from Mr. A. L. Bousfield of the National Museum, Ottawa.

A collection of Orthoptera was identified for the Department of Agriculture, Nova Scotia, and for the Department of Zoology of McGill University.

University Services: The following courses involving 132 hours of lecturing were given by the Curator for the University of Toronto; Second year Honour Biology Course in Systematic Entomology, Zoology 25; Arthropod portion of the Parasitology Course, Course 10 under Hygiene and Preventive Medicine in the Graduate Calendar; Systematic Entomology, Course 21, in the Graduate Calendar.

DIVISION OF INVERTEBRATE PALAEONTOLOGY

Curator - M. A. Fritz

Research Assistant - J. Monteith

Technician - D. H. Monteith

Accessions: The Research Assistant and Mr. Roy Lemon, a post-graduate student, visited an area in the vicinity of Coral Rapids and Long Rapids on the Abitibi River. During their ten days reconnaissance they brought back geological and palaeontological data which have served to further the investigation initiated in 1950. This research is being carried on under a grant from the Advisory Committee on Scientific Research, University of Toronto. Included in the material collected, which is of Devonian age, are: Plantae 260, Anthozoa 28, Stromatoporoidea 2, rock samples 96.

An excellent collection of Cretaceous and Tertiary fossils was received from W. P. Popenoe, Department of Geology, University of California, in exchange for a collection of Palaeozoic fossils from southern Ontario. The collection includes: Echinoidea 3, Pelecypoda 80, Gastropoda 55.

A valuable collection of Devonian fossils made at the site of the Fanshaw Dam near London, Ontario, was donated by Mr. E. T. Tozer, Department of Geology, University of Western Ontario.

Staff collections made this Spring from the original "Vlasta" locality at Thistletown included seven more specimens of the very rare and recently described Vlasta americana Fritz, along with numerous examples of the associated fauna.

In addition to the foregoing we have acquired the following: From Mrs. W. H. Bush, Toronto, 5 Ordovician Gastropoda from New York State; from Mr. D. G. Schell, Toronto, 2 Pelecypoda and 1 Plant, from Lower Cretaceous at Mile 206, Alcan Highway; from Mr. E. T. Tozer, 1 Beltian Algal structure (Collenia) from Waterton Park, Alberta, and one Cambrian slab from China containing 20 specimens of Trilobita.

Besides the above fossils, a set of eighteen 35 mm. slides and one film strip, dealing with the subject "Through the Ages to Primitive Man", have been presented to the Division by the Visual Aids Centre, Department of Education, Toronto.

The following is a summary of accessions:

	By Donation	By Staff Collection	By Purchase	By Exchange	Totals
Anthozoa	2	28			30
Stromatoporoidea		2			2

	By Donation	By Staff Collection	By Purchase	By Exchange	Totals
Echinoidea				3	3
Bryozoa	5	2			7
Brachiopoda	26	3			29
Pelecypoda	2	25		80	107
Gastropoda	5	2		55	62
Cephalopoda		2			2
Trilobita	21				21
Algae	1				1
Primitive Land Plants	1	260			261
Rock Samples		96			96
Totals	63	420		138	621

Preparation, Registration and Maintenance: During the course of the year, the Technician prepared polished surfaces and their sections of invertebrate fossils for research purposes.

Regarding "Maintenance" 20 exhibition cases were renovated; in other instances, exhibits were rearranged to accommodate new material being placed on exhibition.

A record of registered specimens follows:

Anthozoa	11
Stromatoporoidea	1
Crinoidea	1
Bryozoa	5
Brachiopoda	105
Pelecypoda	26
Gastropoda	37

Cephalopoda	1
Trilobita	34
Eucrustacea (Mysidacea)	1
Incertae Sedis	1
Totals	<hr/> 223

Research: A comparative study of the "Devonian Stratigraphy of N. A., Great Britain, Europe, and Asia" has been made during the winter by the Curator and eight post-graduate students. Nine comprehensive papers were presented on this subject, the notes for each being bound and copies placed in the library for future reference.

Two palaeontological studies on fossils from the Abitibi Limestone are in progress; these include a systematic consideration of (1) the Anthozoa and (2) the Stromatoporoidea. These fossils form an extensive bioherm in the above mentioned Middle Devonian limestone.

Devonian Bryozoa from Maine were studied for A. J. Boucot, United States Geological Survey and reported upon.

Two papers were published by the Curator, namely, "The Pelecypod Genus Vlasta in the Ordovician of North America", Journal of Palaeontology, Vol. 25, No. 5, Figs. 1-4, pp. 696-698, September, 1951; and "Genus Trachytoechus from the Helderberg of Schoharie, New York", Bulletin of the Wagner Free Institute of Science, Vol. 25, No. 4, Plates 1-11, pp. 27-30, November, 1951.

Public Relations and Education (other than University): Assistance has been rendered to the following workers: Mr. J. D. Aikenhead, Faculty of Education, Calgary; Mr. G. Barrow, International Petroleum, Florida; Mr. A. J. Boucot, United States Geological Survey, Washington, D. C.; Mr. E. W. Best, Department of Geology, University of Wisconsin; Dr. J. L. Chamberlin, the Biological Laboratories, Harvard University; Colonel John Embick, Department of Geology, Dickenson College; Dr. R. H. Flower, New Mexico School of Mines; Mr. J. A. Jeletzky, Geological Survey of Canada; Miss Frances Wagner, Department of Geology, Stanford University; Dr. H. B. Whittington, Division of Geological Sciences, Harvard University; Hydro-Electric Power Commission of Ontario; Dr. R. A. C. Brown, Manitoba Department of Mines, Winnipeg; Dr. S. K. Chakravorty, Saskatchewan Department of Natural Resources, Regina; Dr. R. L. Casanova, Cambrian Research Laboratory, Statesville, North Carolina; Mr. R. M. C. Eagar, Manchester University, England; Dr. N. H. Fisher, Ministry of National Development, Australia; Mrs. J. Malkowska, Warsaw, Poland.

Loan collections were sent upon request to: Mr. E. T. Tozer, Department of Geology, University of Western Ontario; to Ward's Natural Science, Rochester, New York; and to Dr. A. E. Wilson, Geological Survey of Canada, Canada.

Numerous latex moulds and plaster casts of Ordovician trilobites were prepared for H. B. Whittington, Division of Geological Sciences, ^{Howard} University. The Division carried on the Toronto Junior Field Naturalists study group again this year, meeting once a month from October to May. University Services: Two interesting models were prepared as visual aids for student instruction. One represented the Queenston delta of Upper Ordovician age; the other a preparation illustrating the natural burial of organisms.

The Technician spent much time in very effectively preparing material for class demonstration.

In addition to the foregoing, eighty five 35 mm. Kodochrome slides have been mounted for use in the teaching of palaeontology and stratigraphy.

DIVISION OF ART AND EXHIBITS
Chief - T. M. Shortt

Artist - A. Reid
Artist - E. Thorn

Art: Eleven graphs, six maps and six drawings of skulls were prepared for publications of the Museum's scientific divisions. Twenty-four labels and placards were made for use during special occasions within the Museum.

Exhibits:

Zoogeography: Five new cases were completed for the section of the south gallery being devoted to the animals of the various zoogeographical regions of the world: (1) The second of a proposed three exhibits dealing with the fauna of Australasia was prepared. It features such animals as the Cassowary, Wombat, Lungfish, etc. For this exhibit Mr. Thorn made an excellent model of the Stump-tailed Lizard. (2) New Zealand and the Pacific Islands: This exhibit, designed and installed by Mr. Reid, shows Kiwis, Huia's, rare parrots and other birds. (3) Tropical Africa: This is the first of several cases planned to display the animal life of the Ethiopian region. Designed and assembled by Mr. Thorn, it features Gorilla, Chimpanzee and Colobus and Guereza monkeys, as well as some butterflies and birds. Mr. Thorn remounted the Museum's specimen of Colobus monkey and did an extensive remodelling of our Gorilla for this display. (4) Giant Panda: Our specimen of this animal was installed in a new case with coloured background and photograph of habitat. (5) Cheetah: The mounted specimen was installed in a new case with a background design showing the early use of the Cheetah as a trained hunting animal.

Several new specimens have been prepared for forthcoming exhibits in this section. Notable are three Neotropical Snakes, Boa Constrictor, Tropical Mocassin and Tree-snake. The Boa was cast in latex by Mr. Reid and represents a notable advancement in the technique of preparing reptiles for display. The three new specimens have been placed on temporary exhibition pending the preparation of the Neotropical exhibit. A mold of a Tegulizard has just been completed.

Morphology: The exhibit entitled "Size", the first in a series to be devoted to form and function, was completed by Mr. Reid during this Museum year.

Canadian Animals: Several new mounts were prepared by Mr. Thorn for eventual inclusion in the Canadian collections. These include Pipistrelle Bat, Deer Mouse, Water Shrew, Little Brown Bat and twelve birds.

Work in connection with the rearrangement of the showcase in both galleries occupied much of the staff's time during the past year. Some of the major items in this programme were:

1) The removal and storage of the entire collection of fish casts and the removal of the old style cherrywood cases to prepare for the installation of cases of modern design for the new exhibit on Canadian Fish and Fisheries. This project has necessitated temporarily placing in another part of the gallery the table-cases housing the exhibition collection of amphibians and reptiles.

2) Dismantling of the exhibit on albinos which formerly occupied a large case in a conspicuous location in the north gallery. This has been done with the intention of removing the emphasis from the abnormal in our displays. A few particularly fine examples of albino animals will be retained and will eventually form a small part of an exhibit on "Colour in Animals". The case made available by this move has been used to house the fine specimen of Wapiti which formerly shared an overcrowded case with Bison and Caribou.

3) The large case containing Zebra and African Antelopes was moved to a new position in the south gallery where it will be in direct association with other African exhibits.

Temporary Exhibits: Temporary exhibits displayed in the Zoology rotunda during the past year included: "Starting out in Life" - a three-panel exhibit featuring young animals and their first adaptations to their environment. "T. B. Kurata" - a three-panel display of examples of Mr. Kurata's casts, models, mounts and publications, prepared as a salute to his contribution to zoological science and museum art, on the occasion of his retirement.

A table case showing popular and scientific publications in Zoology produced by this Museum.

Four small exhibits of a topical or seasonal nature, viz., "Golden Garden Spider", "Reindeer", "Cardinal and Tanager" and "Yellow-billed Cuckoo".

One display of poster style was made to advertise new exhibits. This was set up at the front desk.

In addition to the above, the aquarium on the third floor rotunda was maintained and several temporary exhibits, for one night only, were prepared for meetings of various natural history clubs.

Two talks were given to the Toronto Intermediate Naturalists: One by Mr. Reid on the use of plastics in biological work, and one by Mr. Thorn on taxidermy.

Staff members visited museums in Ottawa, New York and Cleveland.

ZOOLOGY LIBRARY
Librarian - Miss E. McClure

Accessions: During the year 1,766 publications were received and catalogued, bringing the total holdings of the library to 57,483.

	By Exchange and Donation	By Purchase	Total
Bound books	38	42	80
Unbound periodicals	1,190	245	1,435
Separates and reports	251		251
Totals	1,479	287	1,766

Registration and Maintenance: The work of cataloguing the separate collection is nearing completion, and the housing of separates in the Divisional libraries is already proving to be an efficient and time-saving system.

Through inter-library loan, a number of publications were made available to biologists working on special problems, and several publications were obtained from other libraries for members of the Museum staff.

A number of copies of our publication "Hawks and Owls of Ontario" was supplied to a group which is working to obtain protection in their district for these birds. It was gratifying that, when a step forward in conservation was contemplated, we were able to meet the need for factual information on the subject, and supply a large number of booklets which could easily be distributed to a large number of individuals over a wide area.

The sales of Museum publications have increased from 1,893 for the year 1950-51 to 3,043 for the year 1951-52, indicating a growing awareness on the part of the public of the work being done by the Museum.

PALAEONTOLOGY LIBRARY
Librarian - Miss Elvira N. Hammell

Accessions: Of the 520 publications received during the year 396 were catalogued. The Library to date contains 20,912 publications. Of the publications received, 298 from the "Coleman Library" were most important accessions because they filled in many gaps which existed in the following periodicals:

Quarterly Journal of Geological Society of London

8 bound volumes; 63 unbound publications

Reports of the British Association for the Advancement of Science

8 bound volumes; 26 unbound volumes

New York Natural History

5 bound volumes

Philosophical Transactions of London

5 bound volumes; 183 unbound publications

The following is a summary of accessions:

	By Exchange and Donation	By Purchase	Totals
Bound books	40	2	42
Unbound periodicals		13	13
Separates and reports	465		465
Total	505	15	520

Registration and Maintenance: The public has maintained a steady demand for the following publications: "The Study of Ancient Life", "The Geological Time Chart", "Through the Ages to Primitive Man", and "Geological Landscapes", sales from the above amounting to 489 for the year.

Correspondence regarding the exchange of publications for the Vertebrate Divisional Library was carried on with twenty-four palaeontologists, as well as with many institutions, as a result of which we received 160 publications. One hundred and thirty-four separates, including 22 vertebrate and 112 invertebrate, were exchanged. Work has also been started on the revision and typing of a new set of cards for the Vertebrate Division.

Considerable time was spent in preparing a list of the periodicals contained in the Library of Palaeontology. This list was submitted upon request to the Library of the University of Toronto for inclusion in the new edition of "A Joint Catalogue of the Periodicals and Serials in Libraries of the City of Toronto".

ROYAL ONTARIO MUSEUM
OF ZOOLOGY AND PALAEOLOGY
STAFF PUBLICATIONS

- Baillie, J. L. "Alfred Kay"
Brodie Club Proc. 14, p. 5.
- "Diving ducks, stiff-tailed ducks and mergansers"
(Canadian Nature, vol. 13, 1951, pg. 124).
- "Winter season - Ontario-western New York Region"
(Audubon Field Notes, vol. 5, 1951, pp. 201-203).
- "Spring migration - Ontario-western New York Region"
(ibid., vol. 5, 1951, pp. 253-254).
- "Nesting season - Ontario-western New York Region"
(ibid., vol. 5, 1951, pp. 286-287).
- "Fall migration - Ontario-western New York Region"
(ibid., vol. 6, 1952, pp. 13-16).
- [Review of] R. M. Saunders' Carolina Quest
News Bull., Toronto Anglers' and Hunters' Assoc.,
Nov., p. 4.
- Baillie, J. L. and W. H. Gunn. "Fifty-first Christmas bird count"
(Audubon Field Notes, vol. 5, 1951, pp. 48-49).
- Downing, S. C. "The pronghorn antelope"
(Canadian Nature, vol. 13, 1951, pp. 116-117).
- "The timber wolf"
(ibid., vol. 14, 1952, pp. 8-9).
- "The fisher and muskrat"
(ibid., vol. 14, 1952, pp. 42-43).
- "Southern forest mammals"
(ibid., vol. 14, 1952, pp. 78-80).
- Peterson, R. L. [Review of] Frank Gilbert Roe's "The North American
Buffalo: A critical study of the species in its
wild state"
(Canadian Forum, vol. 31, no. 372, 1952, p. 235).

- Peterson, R. L. and S. C. Downing. Notes on the bobcats (Lynx rufus) of eastern North America with the description of a new race.
Contributions of the Royal Ontario Museum of Zoology and Palaeontology, no. 33, 1952, pp. 23.
- Peterson, R. L. and A. de Vos. "A review of the status of woodland caribou, Rangifer caribou, in Ontario"
(Journ. Mamm., vol. 32, 1951, pp. 329-337).
- Shortt, T. M. [Review] of Finn Salomonsen's "The Birds of Greenland"
Arctic, Journ. of Arctic Institute of North America, vol. 4, December 1951.
- Snyder, L. L. "Birds about the dooryard"
(Canadian Nature, vol. 13, 1951, pp. 166-167).
- "On local records of Empidonax virescens and E. traillii (Canadian Field-Naturalist, vol. 65, 1951, p. 120).
- "Aerial feeding on insects by ruby-throated hummingbird, Archilochus colubris"
(Auk, vol. 68, 1951, p. 507).
- "Introducing the Royal Ontario Museum of Zoology and Palaeontology"
(Systematic Zoology, vol. 1, 1952, pp. 36-38).
- "Birds on an eastern sea-coast"
(Canadian Nature, vol. 14, pp. 86-87).
- Urquhart, F. A. "Marked Butterflies"
(Natural History, vol. 61, 1952, pp. 226-229).
- Walker, E. M. "The Odonata of the Northern Insect Survey"
(Canadian Entomologist, vol. 83, 1951, pp. 269-278).

